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SYMPHYSEOTOMY.

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SYMPHYSEOTOMY.

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One year ago this month there appeared in the New York Journal of Gynæcology and Obstetrics, a paper by Egbert H. Grandin, M. D., the leading paragraph of which read like this:

"The clinical experience of two hemispheres justifies the enrollment of symphyseotomy amongst the obstetric operations. It enters the list as the special antagonist of embryotomy, and it displaces the Cæsarean section under relative indication. *Per se* the operation entails no other risk than that associated with every surgical procedure, and through its timely performance, still birth, the result of pelvic dystocia, may be reduced to a minimum, as also the untoward effects of undue pressure on the fetal brain."

The above paragraph is of special interest to the general practitioner whose work is largely in obstetrics. That there is a way to deliver a woman with a moderately contracted pelvis at full term, of a normal sized child, without the usual bad results in the way of a dead fœtus, and the bruised and lacerated parts of the mother, in fact, to a large extent doing away with the danger to both mother and child, is enough of itself to commend it to our careful consideration as to its origin, adaptability, indications and limitations. Its origin is said to go back to the middle of the seventeenth century, when, in 1644, it was performed in Italy but fell into disuse. Again, over a hundred years later, it was brought forward in France, in 1777, and shortly afterwards abandoned on account of its poor results,

results which we now know to have been due to the lack of perfect cleanliness in surgery.

Brought forward again by Morisani, of Italy, in 1866, and adopted by Pinard, of France, in 1892, it has since been done many times, and with such favorable results that we can hope that in symphyseotomy we have a substitute for some of the most severe obstetrical operations.

As regards the adaptability and limitations, we may say, in a general way, that its maximum limit begins where that of version and high forceps should end. I use the word "should," for I feel that the forceps, as they are frequently used, with great force and powerful traction rods, are largely responsible for many maternal deaths or lifelong injuries, and without doubt many an idiot or physical cripple owes his disability to injury done to the brain in a severe forceps delivery.

I believe symphyseotomy is adapted to nearly all cases where craniotomy has usually been done, for since its revival, with its favorable results to both mother and child, it has caused many an obstetrician, who heretofore has looked upon the fœtus *in utero* as simply a surgical part of the mother, or as a tumor to be removed with the least detriment to herself, to thinking that an unborn child may have some rights to be saved, even though the mother should incur some slight additional risk in so doing. Under aseptic surgery, there will be very little additional risk to the mother in symphyseotomy, while in craniotomy, with the conjugate diameter of two and one-fourth inches or less, in addition to losing the child, results show that one woman in five has died from injuries received. Its adoption as a substitute for the induction of premature labor is not at present so favorable to the mother. Statistics of symphyseotomy made up last year give a maternal mortality of nine per cent., while that of induced labor is only five per cent., yet the conditions for comparison being so different, it is hardly fair to judge from the figures expressed. It is in the infantile mortality that symphyseotomy shows to advantage. The infantile mortality of premature labor is not less than forty-three per cent., while that of sym-

physeotomy, taking in those cases where delivery has been attempted with high forceps and failed, before performing the operation, is only twenty-two per cent.

In relation to the Cæsarean section, where the true conjugate is two and one-half inches or over, symphyseotomy is preferable for the needs of the general practitioner unused to abdominal surgery. It should not be undertaken as lightly as a forceps delivery or a version, but it does not demand the same degree of operative skill or of minute attention to technical details as does either the Cæsarean section or PORRO's operation. The Medical News of May 5, 1894, gives the Cæsarean record of the United States a mortality of thirty-eight per cent., also states that there has been for that time forty-four symphyseotomies under asepsis, with the following results: Mothers dead, five; children dead before operation, four; died after operation, four; died under operation, four; women lost after the last twenty-eight operations, only two; lost after the last thirty-seven improved Cæsarean operations, nine, or three and one-half times as many under the fairest possible comparison, *i. e.*, seven and one-half per cent. of deaths against twenty-four and one-third per cent. Therefore, it would seem that symphyseotomy should be preferred to Cæsarean section where the contraction is not below the minimum limit for the operation.

Dr. GARRIGUES, of New York, claims that it competes even with PORRO's operation, since it has been successfully performed when the woman has been many days in labor, whereas the PORRO operation is accompanied with the fearful mortality of fifty-seven per cent. He claims that even difficult forceps and version operations ought to be replaced by symphyseotomy, since these operations, where a true conjugate is less than three and one-half inches, entail much greater mortality for both mother and child, and the latter, if it survives, is apt to become epileptic or idiotic.

Prof. MICHAEL, of Baltimore, proposes the operation for delivery in impacted mento-posterior face cases, when the chin

cannot be rotated forward, and in persistent posterior positions of the occiput with impaction.

Dr. Charles Jewett says "that opening the pubic joint in such cases after ordinary measures have failed, will, he believes, be justifiable as a means of saving many fetal lives, with practically no increased risk to the mother. It at once converts an extremely difficult or impossible into an easy delivery, with a minimum of pubic separation and of consequent violence to the pelvic structures." It is also recommended in normal pelvis with an unusually large child. On the other hand there are contra-indications, such as cancer of the cervix, rigidity of the os uteri, fibroid tumors, anchylosis of the sacro-iliac synchrondroses, or where the rami of the pubis are very much thickened, and doubtless other forms that would preclude the operation.

In determining the scope of symphyseotomy, the pelvimeter is absolutely essential. The digital examination may give warning of trouble, but the pelvimeter should determine the extent of the deformity. By placing one point of the instrument below the spinous process of the last lumbar vertebra, the woman lying on her side, and the other point at the anterior notch at the upper anterior border of the symphysis pubis, the reading on the dial will indicate the external conjugate diameter. The true diameter or internal conjugate is approximated from this by taking three and one-half inches from the external conjugate.

Lusk says, that if the external conjugate measures less than six and one-fourth inches, it may be assumed that the pelvis is flattened. If the pelvis measures less than seven and one-half inches, flattening may be assumed in half the cases. Above seven and one-half inches, antero-posterior shortening is very exceptional. The transverse diameter should be estimated by measurements between the anterior spinous processes and crests of the ilia, and the normal average is ten and one-fourth and eleven and one-half inches, respectively. Any considerable falling below this normal average, or where relations are equal or

inverted, would indicate, of course, a shortening or deformed pelvis.

In the cases reported, the degree of contraction varies from two and one-half to three and one-half inches in the true conjugate. It seems generally settled that two and one-half inches in the true conjugate should be the minimum limit. Below that, at full term, with a normal sized child, the operation, so far as present experience goes, would not be indicated. The upper limit is modified by the conditions as to the kind of deformity present. If a flat pelvis and normal sized fœtus, we may say three and one-half inches should be the maximum limit, since a normal size fetal head at term is three and one-half inches in bi-parietal and sub-occipito-bregmatic diameter, and here forceps or versions could be elective. But if it is a generally contracted pelvis or straight pelvis, then one-half inch more should be placed to the upper limit, or four inches.

It is to be noticed that, on separation of the pubic bones, space is gained not only in the true conjugate but in all directions. It has been demonstrated that the distance increases from the ends of the pubic bones to the middle of the sacral promontory more than half an inch, when the pubic bones are at the maximum safe distance apart, that is, two and three-fourths inches. The transverse and oblique diameters, and every line drawn from the promontory to a point on the ilio-pectineal line, in front of the transverse diameter, increases from one-quarter to one-half the distance between the ends of the pubic bones, which at the end of the safe distance of two and three-fourths inches makes from about three-fourths to one and one-half inches increase in space. It remains for us to consider the prognosis of cases that come within the limits of the operation as set forth by the space gained.

Vernier has, in one hundred and twenty-four aseptic operations, found a maternal mortality of nine per cent., but says that by far the most of the deaths were not to be attributed to the operation. The same author gives an infantile mortality of twenty-two and seven-tenths per cent. That includes infants with

fractured skulls, from attempts at delivery by forceps before resorting to the operation, and shows a much higher rate than it should if such attempts had not been made. The same author gives a combined mortality for mother and child, after deducting five children that were dead before the operation, as sixteen per cent. Later figures give a much better rate. PINARD, of Paris, has had eighteen operations with no deaths; ANDZWEIFEL fourteen, and no deaths. In Italy there have been fifty-five operations, with only two mothers and seven infants lost. Results show that union promptly takes place in the pubic joint, and that the gait is as good as ever. The manner of operating is somewhat different by different men and in different countries. The Italian or sub-cutaneous method, as practiced by MORISANA, is to make a short incision in the median line, about one and one-fourth inches in length, and ending just above the pubis, then a short transverse incision through the pyramidalis muscles, just long enough to admit the index finger behind the symphysis and down to the lower end of the joint. Along the finger he passes a scycle-shaped knife, called the galbiata falcetta, and cuts the sub-pubic ligament and the pubic joint from below upward and behind forward. This method has its advantages in its simplicity, its lesser liability to hæmorrhage, and its greater likelihood to be kept aseptic, while, if the hemorrhage should occur in the deeper part of the wound, it would be more difficult to control. In this method, the sub-pubic ligament must necessarily be sacrificed, which in the French method might not be necessary if the separation required was not more than one inch. The other method is called the open method, and is used by PINARD and most of the modern operators. In it the operator has the advantage of seeing as well as feeling where he is going and what he is doing, and he is enabled to separate the pubic joint in whatever direction he wishes. He also can check hemorrhage by seeing and tying the blood-vessels if necessary. The latter, or open method, was the one that I employed in the following case that I wish to report, the

first case of symphyseotomy, so far as I am aware, that has been done in New England.

Mrs. D., aged twenty-eight, born in Ireland, always healthy and well; mother and sisters had easy confinements and many of them. First labor commenced March 19, 1892; lasted three days; midwife in attendance for two days, when a physician was called. Forceps were applied and failed. Version was done, and delivery was accomplished after a long and difficult attempt, and with forceps to the after-coming head. The child weighed seven pounds. Second labor, April 10, 1893; in labor twelve hours. I was called, and found os fully dilated, with no engagement of the head. Waited several hours, when I called Dr. F. E. Small in consultation and we delivered, with high forceps, after long and severe traction, a child which died in a few minutes, probably from compression of the brain. The child weighed eight pounds. Third labor, I was engaged when she was five months pregnant, and the alternative was given the mother either to have premature labor brought on at eight months, with small chances of the child surviving, or Cæsarean section at term, with good chances for the child but with more danger to herself. She chose the latter, and as the time approached I decided to do symphyseotomy. Labor commenced at nine o'clock May 9, 1894, and she went at once to a private room in the Maine Eye and Ear Infirmary. I saw her at 11:30 P. M., and decided, her condition being good and her labor not very severe, to wait until morning. At eleven A. M. May 10th, labor having been severe for several hours and the os thoroughly dilated, but with no descent or engagement of the head, which was the presenting part, the pelvic measurements were taken with the pelvimeter by Dr. Stanley P. Warren and myself, and were as follows:

Distance between the spines,	$8\frac{1}{2}$ inches.	Normal	$10\frac{1}{4}$ inches.
Distance between the crests,	$9\frac{3}{4}$ inches.	"	$11\frac{1}{2}$ "
External conjugate,	$6\frac{1}{4}$ inches.	"	8 "
True conjugate,	$2\frac{3}{4}$ inches.		

These figures showing a pelvis contracted in all directions, or

a justo-minor pelvis. The operation having been determined upon, and assisted by Dr. S. C. Gordon and Dr. Freeman E. Small, Drs. Ring, Warren and Pudor being present, the patient was etherized and the pubis shaved and rendered aseptic by scrubbing with soap and water and washing with corrosive sublimate solution. An incision about three inches long was made in the medial line through the mons veneris down to the symphysis. The lower deep border terminating at the apex of the pubic joint, an opening made through the pyramidalis muscles allowed the finger to pass below and behind the joint. A silver female catheter held the urethra depressed downward, backward and to the right of the joint, thus insuring its safety. The galbiata falcetta, which I show you, was passed along the index finger, and an attempt made to open the joint from below upward and forward, but failed, and after several trials this instrument was laid aside, and a probe-pointed concave bistoury was tried, and after finding the joint, which lay about one-third of an inch to the left of where it apparently should be, it was easily divided from above and behind downwards and forwards to the sub-pubic ligament, which I wished to maintain intact, if possible, hoping thereby to get a quicker and more firm union of the symphysis. The joint immediately separated about one-half an inch; the patient was brought down to the edge of the table and put in a position for forceps delivery, and the membranes ruptured. The head did not engage and forceps were applied, the head lying in the first position.

On making moderate traction, no advance could be made, until, on more severe traction, the sub-pubic ligament gave away and the joint immediately separated about one and one-half inches, when, with slight traction, the head descended and rotated as in normal labor, and was easily delivered. Until the sub-pubic ligament was ruptured there had been very little hæmorrhage; upon its separation, the hæmorrhage became profuse and continued until the wound was packed with iodoform gauze. The pubic bones were then brought in apposition and held by pressing on the trochanters, and the wound closed with silk

worm-gut sutures, except at the lower angle, which was left open to facilitate the removal of the tampon of gauze, which was done on the following day with no return of the hæmorrhage. The pubic bones were rendered immovable by passing three strips of adhesive plaster, two inches wide, about the pelvis, and the legs were tied at the knees. At the end of the first week there developed a phlegmasia alba dolens of the left leg. Whether it was from absorption or the result of too tight strapping of the adhesive plasters, I am unable to say, but am inclined to think it the latter, since I had changed the plasters about half an hour before the patient noticed the pain, and the nurse the swelling in the leg. The tension of the plasters was lessened somewhat, but the swelling and pain continued for some time and delayed convalescence, besides making the patient restless and uncomfortable. She went home at the end of four weeks, and expresses herself as feeling no movement or weakness at the pubic joint.

Measurements of the fœtal head were as follows:

Bi-temporal,	3¼ inches.
Bi-parietal,	3½ inches.
Sub-occipito-bregmatic,	4 inches.
Circumference,	13½ inches.

The child was a female and weighed eight pounds undressed. The child is to-day alive and well. A comparison of the above measurements of the fœtal head with that of the true conjugate of the mother, should convince any obstetrician that a normal sized child could not be delivered with forceps without a degree of compression that would prove fatal to the child, and a long and hard pull for the operator, as those who have attended this case before have experienced.

DISCUSSION.

Dr. S. P. Warren, of Portland, said: the Business Committee have asked me to open this discussion by speaking on the indications for symphyseotomy, and first I wish to congratulate Dr. O'Neil upon his success, not only

in operating, but also in being able to convince his patient that it was her duty to accept the operation. Her puerperal history has been given you. It is certainly the opinion of the gentlemen who have attended her in previous labors, that a living child of normal size cannot be extracted from her pelvis. With this fact plainly set before her, she elected the operation, and that she chose wisely the result has proved. We have also a right to self-congratulations, as physicians of Maine, that we can present the first symphyseotomy in New England, and a successful one at that. It is pertinent for us, therefore, to discuss this new operation conservatively, and as far as is possible impartially, with the expectation that therefrom future pregnancies may be directed to a successful termination.

In one of the most recent and valuable text books on obstetrics (Parvin, ed. 1890), is the following sentence: "The American practitioner will find no condition justifying its (symphyseotomy) performance, and therefore it is dismissed with this brief reference." (p. 685.) In contradiction to this opinion, since its revival in 1892, the operation has steadily been gaining favor among experts, as offering a reliable substitute for either induction of premature labor, embryotomy or Cæsarean section. Dr. Harris' statistics are: "Since March 8, 1893, thirty-one operations in the United States, with two women and seven children lost. One woman was in labor three days before operation, and died of sepsis on the eleventh day. The other in labor thirty-six hours, temperature 102, pulse 140, vagina œdematous and badly torn by forceps before entrance into hospital; died of shock twelve hours post partum; three children dead before operation, two delivered by version, dying under extraction, and two died soon after extraction." (N. Y. Jour. Obst., July, 1894.)

It is undoubtedly the fact that the foreign population of our cities offer most of the subjects for whom this operation is suitable. Not to mention cases of the true justo-minor pelvis, there are quite a large percentage of women who have the so-called "flat pelvis." Here the conjugate is narrowed by the projecting forward of the promontory of the sacrum, lessening the normal anterio-posterior diameter of four inches to a greater or less extent. The changes in these pelves are often progressive. A woman who will have a normal delivery with her first child, afterwards will require instrumental assistance with every succeeding pregnancy, and the children are by a large majority killed in extraction. Such a woman in this city has been delivered of eleven children; the first four were living, all the others were dead when born, and she has had the experience and operative skill of our best obstetricians. Such a patient, also, I myself delivered of the fourth child, being her third successive dead child, the difficulty being due to a flat pelvis, with the conjugate narrowed to three inches. These women, and many others with whom you may have had a similar experi-

ence, are among the class of those for whom symphyseotomy is indicated. Another feature of interest, in electing this operation, is this; our Roman Catholic patients are opposed to the idea of inducing premature delivery, because of the belief among them that "eight months' babies won't live." Any operation which gives hopes of bringing children into the world alive is received with more favor, and of the two requires less argument for adoption. Noble, in a recent article on this topic, says: "The contrast between the prospects of a premature child, born four to six weeks before full term, and those of a child born at full term under symphyseotomy, are altogether in favor of the latter."

As a preliminary to the operation in a given woman, pelvimetry must be very thorough. The limit of contraction is set at two and three-fourths inches in the conjugate; below that measure the section is conceded. The most careful measurements should be taken, and verified by a second person, with the modern pelvimeter, or the method recently devised by Kelly, of Johns Hopkins Hospital, may be tried.

In the actual delivery, the child should be extracted preferably by forceps, as experience shows that in reported cases version is liable to result fatally to the child, because of the well understood danger in version, of cutting off the fœtal circulation by compression of the cord.

Upon the part of the mother, it is essential that the cervix is dilated or dilatable; that she has not been subjected already to long trials of forceps or version; and it seems best, from experience, to delay operation until labor is actually in progress. The question whether the operation shall be accepted as an elective or as a last resort ought not to be considered, for in the great majority of cases there has been ample time during gestation to study the pelvis and know its possibilities. Besides being indicated in the two varieties of contracted pelvis mentioned, the operation is also useful in one-sided pelvic deformities, or occasionally when the pelvis is blocked by growths.

Upon the part of the fœtus, the operation is indicated in certain abnormal presentations, in occiput-posteriors especially where there has been a history of successive cases of the kind in the same patient, in impacted face cases or impacted shoulders. The operation is not suitable when it is probable that the child is already dead.

The operation demands a fair amount of manual and anatomical skill from the operator, but most of all a close adherence to the recent antiseptic technique. Its advantages should not be lightly considered, but rather accepted only after thorough study and full consultation. Thus approached, symphyseotomy may be able to assist us most perfectly in that most trying of obstetrical problems—how to deliver a live child through a contracted pelvis.

Dr. F. E. Small, of Portland, said he had been asked to speak upon "the

technique of the operation." It is to be borne in mind that the whole object of the operation is to gain more room, and the different methods have been fully elaborated by Dr. O'Neil in his paper; one, which has not been touched upon, is to separate the symphysis by the chain-saw if bony union has taken place.

After Dr. Dana's admirable paper and the clinic at the Hospital, it is needless to speak in detail of antiseptic methods, except to affirm that no man can honestly practice surgery without antisepsis. We have not yet reached asepsis; what progress we have made has been by means of antiseptics.

In approaching this operation of symphyseotomy, first ascertain the condition of the cervix; if hard, wait, tamponing the cervix with antiseptic gauze or using the Barnes dilator to save time to the patient.

The open method of incision is said to afford the best opportunity to see what is going on. As a matter of fact, there is very little to see. The wound is practically a subcutaneous one, and the main indication is to keep the bladder out of the way. Severe hæmorrhage is not likely and is indeed unusual. Any obstetrician may find himself in position where the operation is demanded, and any one, it has been said, ought to be able to make it. One ought to be prepared to make Cæsarean section if required. Symphyseotomy is not to be made in every case of obstruction or difficult labor, it is not a substitute for something else, but is a legitimate operation by itself, and must be adopted only after careful measurements have demonstrated its necessity.

Dr. S. C. Gordon, of Portland, said he wished to commend the exceeding good judgment of Dr. O'Neil in selecting the operation and his extreme care in its performance. As a result, the patient did remarkably well, and the result was most gratifying.

In response to a question of Dr. J. N. Merrill, of Corinna, as to the chance of permanent injury after a separation of two and three-fourths inches, Dr. O'Neil replied, that more would probably endanger the sacro-iliac articulation.